NATIONAL SECURITY COUNCIL
WASHINGTON, D.C. 20506

SECRET

August 28, 1972

25X1 MEMORANDUM FOR [redacted]

FROM A. W. MARSHALL

SUBJECT: Follow-up on Meeting of 18 August

After our lunch Chip and I continued to discuss the topics that came up: R&D on intelligence analysis, quality control, and training. Attached are two memoranda by Chip on the first two subjects. He will be seeing [redacted] about training and may have a memorandum on that area later. 25X1

They represent first thoughts that may be of some use to you. Clearly there is a lot of work that could be done to more fully explore the appropriate design of a community R&D effort. The quality control area is probably an even more difficult organizational and management area.

I have some additional comments on these three areas, but they can wait until our next lunch.

NSC review(s) completed.

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MEMORANDUM FOR RECORD

FOR MR. A.W. MARSHALL

SUBJECT: Quality Control

Quality control can be examined in two elements: the definition of what quality is and the development of an approach to insure its maintenance.

What is quality?

Defining quality is not an academic exercise because the view pf "what is quality" varies among producers and users. It is important to develop an understanding of how these definitions vary between participants in order to realize what influences need to be employed to improve output. For example, in an intelligence product analysts may evaluate their output based upon what it communicates to other analysts, the intelligence manager may see the output as meeting requirements laid on his section, and the user may judge the product as to whether it provides material relevant to his needs. To tailor such a product to the user would require making the analyst aware of consumer needs and orienting the intelligence manager on product rather than process.

The definition of quality also embraces a number of criteria--e.g., the length of publications, quality of English grammar, number of products, lapsed time from collection to dissemination, response time to questions, analyst intuitive satisfaction, and the presence or absence of feedback from upper level intelligence managers and users. Each criteria has some merit in the perspective of different participants, and all have some validity in an absolute sense. There are times when a short response time is more critical than good prose, when publication length is critical to respond to questions, etc.

Quality in its more subjective and less quantifiable form is my concern. The community tends to measure quality in three categories:

--quantifiable variables, such as volume, response time, analyst work load, etc.

--process variables (were all the procedures properly executed?)

--Internal feedback (rather than external feedback, evaluation is based on whether good, bad or no reaction was received from within the community).

We are now raising to more prominence two different evaluative categories--the tailoring of products to consumer needs and the use of different approaches to get more from raw data. The impossibility of setting absolute criteria and the complexity of these two categories favors those who for various reasons intend to resist their implementation.

Managing Quality Control

No single answer exists to the problem of quality control. While people frequently suggest that the problem is easier in business than in government because of the presence of profit and loss statements, this is an oversimplification. An assembly line should be the most susceptible to control, yet the number of auto recalls and problems in G.M.'s Vega plant demonstrate the complexity of quality control. As for the ultimate feedback of profit and loss statement, such messages have some value at the executive level but come too late after the event (when a car was assembled) and are too summarized to give low level managers effective feedback.

Experience in the industrial setting does provide some guidelines for how quality control should be managed generally. The points below are my perceptions.

--The aspects of output which need to be controlled should be explicitly identified. Criteria are then established for what is good or bad output. Means to detect performance against these criteria are then developed.

--Feedback on performance must be timely and constructively oriented to those individuals capable of influencing the output.

--Criteria cannot be standardized for all output, but must be tailored to the various categories of products.

--Managers are responsible for quality and should have a role in its control, but some portion of the quality control effort should be independent of them. In intelligence, for example, producers at low levels should evaluate product quality but some review effort needs to be centered at the higher levels of DCI and NSC.

--Results of evaluations should receive wide dissemination so that lessons learned reach many members of the community.

Evaluating the output of intelligence to me resembles the problem of evaluating the work of academic institutions and research organizations. Performance is difficult to judge because the output represents intellectual thought as opposed to physical items, and because individuals generally view such comment on their intellectual effort as subjective personal affronts. A first prerequisite for beginning an effort to do this is the determination to accomplish some form of control despite the difficulties which will be encountered. I have not studied this area in depth (much of my control training is budget oriented), but at least four techniques have been tried:

--Evaluation by consumers, such as student evaluation (in the intelligence community the NSCIC is an example).

--Evaluation by peers, (which I have not seen in the community and probably happens only infrequently and informally).

--Carefully isolating the quantifiable controllable criteria and establishing a standard system to deal with them; then concentrating supervisory effort under the pressure of a respected leader to improve the subjective areas.

--Reorganizing to divide resources in such a manner that subunits must bargain among themselves to get the resources they need, and therefore meet each others requirements.

Given my perception of the present community effort I think a quality control group needs to be established temporarily at the DCI level. High level exposure and concern is necessary because work in quality control in intelligence apparently is not far advanced, the performance criteria are numerous, ill-defined and subjective, and management has been resistant to change. This group would perform the following major tasks:

--Defining the various measures of quality, evaluating their applicability to various community outputs, and establishing means by which these outputs can be judged and the results sent to the appropriate individual.

--Develop procedures to insure that changes in output based upon feedback take place.

--Examine the motivation system for quality control and recommend improvements.

--Investigate quality control experiences in industry, academic institutions, and other government organizations for ideas.

--Conduct quality control efforts on specific community outputs. Sampling procedures could be used to limit the size of the effort required.

In reference to evaluating specific outputs some effort is already occurring in the NSCIC review process, NAG activities and the DCI's product review work. The NSCIC effort is valuable as an impetus toward change, but of course requires support from its participants (who must act on its conclusions). However, this effort is not enough. The NSCIC is too small for the work which is needed, it removes the onus of control too far from community management, and it allows resistance to change to coalesce around one point. NAG work also helps, but has the same limits as the NSCIC.

A DCI level effort is key. One might suggest that the DCI cannot evaluate the community of which he is a part, but I feel the grasp of consumer needs and the expertise at the DCI level far outweighs any thought that it could not check on the community. The problem is devoting manpower and energy to that task. I suggest forming ad hoc review groups, much as the NSCIC has done, which could do the work with the DCI staff (e.g. a Quality Control Group??) managing the effort. Judicious organization of groups and guidance--both of which the NAG could help with--could keep the workload at a reasonable level.

MEMORANDUM FOR RECORD

FOR MR. A. W. MARSHALL

SUBJECT: R&D In Analysis and Presentation

R&D efforts need a two fold approach. First, there must be a continuous effort to develop new or find old methods to analyze problems and test their applicability to intelligence situations. Second, research needs to investigate how the results of analysis can be best communicated to the consumer. The first deals with improving the intrinsic quality of the analytical effort. The second recognizes that products not sensitive to, or not aimed at, needs are lost in the noise of the input streams that policy-makers are confronted with in reaching decisions.

R&D In Analytical Techniques

Research in exploring new analytical techniques is insufficient in the community. Some attention is given to the use of new methods of analysis now, but the rate of innovation is low. Effort is needed in introducing analysts to rigorous, alternative approaches to replace their present and, perhaps, overly individualistic intuitive methods. Organizational behavior, models of decisionmaking processes, psychological evaluative approaches, and the Bayesian techniques are examples of immediate relevance, but these are only a sample of what may be available in the academic and business community as methods to view problems.

The process of finding and using new methods involves four distinct stages:

--The search effort to locate methodologies (Intellectual)

--The test phase in which a method is applied to specific intelligence problems, or is evaluated in some other fashion, to assess its value in analysis. (Intellectual)

--The dissemination phase when the method is catalogued, entered into doctrine and passed to analysts through training and other methods. (Managerial)

--The implementation phase when the new method is employed and its employment and effectiveness is monitored. (Managerial)

Each stage involves different people in different levels of the organization and demands different levels of competence. For example, the search effort requires individuals experienced in

intelligence but also having an appreciation for research techniques. The emphasis here is not on people who are good at research per se but on those who can find techniques for research. They must visit organizations outside the community, review literature and exploit other sources of assistance (eg: ARPA can provide some funding; intelligence training units may provide motivated manpower). Testing a methodology requires bringing a method to bear on a problem and may involve having analysts learn and use the method, finding issues on which it can be used, developing experimental products and checking with consumers for their opinions. Having established the validity of a new approach the effort moves from the more intellectual tasks to the managerial problems of implementation and operation. At this point it may be more appropriate to use a group of managers rather than research oriented individuals.

Considering that present community effort in this area is very small I think DCI level action is initially needed to give visibility and support to the task. I realize that there are disadvantages in that lower level managers may be antagonistic to upper level initiatives and that analysts are farther away from the effort. A lower (DI and DDI) approach would bring the R&D task closer to those daily concerned with products. However, what might result is the loss of top level exposure and the increased cost of fragmented efforts in different organizations. I would prefer to see such involvement grow gradually from the DCI activity as experience is gained in what is available and how it can be used.

Initially a four - five man team of expert intelligence hands could be formed to conduct liaison with outside organizations (schools, research organizations, etc.) and to research literature in order to isolate approaches and develop their potential for intelligence. Subcontracting might be used to have specialists examine problems testing potentially useful methodologies. ARPA is one source of funding, and this would be an understandable technique since the community is unlikely to be familiar with a new approach. Testing could also be done internally by tasking agencies to examine problems using specific methods. Innovative products resulting from both efforts could then be provided to users for their reaction. If favorable, these methodologies could become doctrine in training curriculum, papers and analyses.

Reaching the goals of this scenario poses difficult problems in dealing with analysts locked into old approaches and with managers who see no wrong with past or current analytical methods. In the long-term diversifying the approach to problems requires altering the manner in which we handle prople -- whom we select, how we train and what we reward. In the short run, however, it is important to give alternate approaches visibility so that motivated analysts will see and test them, aggressive managers will encourage experimentation, and policymakers will see their possibilities. Consequently, I favor DCI level action. Also this will probably encourage other agencies to develop their own efforts, as DOD elements have been doing. Experimental products for Kissinger resulting from this type of work will probably give less willing agencies a signal to what is needed.

Presentations

Service to consumers is the principal job of the community; yet its output is frequently insensitive to consumer needs because (a) there is inadequate awareness of what users need or want (the sensitivity issue), and (b) products are not designed with an appreciation for the time consumers have to study them (the communication issue). Let me caveat my comment by recognizing that the community serves a number of consumers in addition to those at the highest level; however, this problem probably exists with most customers of community products. Also getting consumers to give guidance is a problem; yet the community is not making enough of an effort on its own to use presently available contacts and sources to define what user needs are.

Improvements in both sensitivity and communication should at least come from some present work, provided the community takes action. The NSCIC reviews should highlight communication problems between user and producer. The community needs to take these to heart and develop techniques to prevent their reoccurrence. Research in analytical methods will affect presentations--for example, examination of Bayesian techniques gives ideas on how to best communicate to users the level of uncertainty associated with analyses and conclusions. The DCI staff in its examination of community output could generate both economies and improvements in presentations.

Additional techniques which could be used to study the sensitivity and communication problem include:

--Development of experimental products (which we are doing).

--Wider distribution of speculative papers attributable to analysts and caveated as non-agency positions (both INR and DIA have provided thought provoking material).

--Research on consumers' needs by reading their papers, studying their speeches, and examining their actions and needs in the past (we are doing a form of this for Kissinger).

--Using interviews and developing innovative techniques to get feedback from consumers.

--Conducting product reviews.

Developing a unified overall approach to improve presentations is more difficult in my view than for R&D in analytical methods. One encounters the same problems in resistance to change, compartmentalization and community size. Additionally, however, good products are tailored to the needs of each user, whereas new analytical methods probably would have more common use across the community. To understand each user's needs requires an intimate study of what types of decisions he makes, what forces act on him, what information he does or does not have and what catches his attention. This knowledge must then be combined with an understanding of the resources available in the community to serve him.

This critical need to tailor products to individual users leads me to believe that a development effort in presentation techniques would best be centered at lower than the DCI level, probably at the DDI or DI echelon. DCI level interest and concern, plus encouragement from the NAG, could create a high level interest and instigate a sense of competition which would motivate less innovative managers. Given the present resources probably available, I would suggest an approach in the near term with three elements:

--Using the results of NSCIC studies and other projects being undertaken at DCI and NSC level to develop guidance to pass to program managers.

--Loosening restrictions on speculative products and experimental outputs at DDI and DI.

--Conducting reviews of the needs of specific policymakers (the President, Kissinger, Secretary of Defense, Secretary of State) by reviewing their writings, speeches and past actions; this could be done at the level responsible for the support (ie.--INR study Secretary of State, DCI study the President, DIA study Secretary of Defense).

A final point is that thought must be given to the overall question of the community's implicit perception of meeting consumers needs.

One needs to ask who is the consumer--what is he reading, how frequently, in what context, etc? From a general description of the types of consumers, one could then examine present outputs to see if they fit needs. For example, my impression is that many outputs are smorgasbord documents, written for everyone and giving each less than is needed. It would be more valuable to prepare analytical documents for analysts to communicate with each other, policymaker outputs which take intelligence and apply it to policy issues for decisionmakers, position documents in order to give intelligence people a place from which to make improvements, and newsy documents to satisfy peripheral consumers seeking background data. Each type of document requires different analysis, review procedures, formats and distribution.

18 August 1972

MEMORANDUM FOR THE RECORD

SUBJECT: Meeting with Andrew Marshall and Captain Pickett, NSC Staff

1. I met this date with Andy Marshall, Chief, Net Assessment Group, and Captain Pickett of his staff at Andy's office in the Executive Office Building, to discuss a number of matters of mutual interest.

2. I explained to Andy that his memorandum of 27 July to John Clarke discussing elements of a comprehensive product improvement program suggested Andy's staff already was working in some of these areas and I thought it would be valuable to have an exchange of information as to what PRG had underway in these areas and what Andy and Captain Pickett might be doing.

3. I described the training survey [redacted] has under way. Andy and Pickett have been briefed by OTR. Their interest is broader than the PRG survey since they are interested in getting a general idea of the kinds of training given analysts as background for an understanding of how analysts look at their jobs and how they are motivated to remain analysts. Captain Pickett will contact [redacted] next week for more information on the PRG project. Neither he nor Andy are planning on writing any study relating to training but are merely seeking information. 25X1 25X1

4. Andy mentioned a paper [redacted] has developed proposing establishment of a training institute which Andy feels would be of interest to PRG. 25X1

5. I described briefly the PRG paper now in rough draft which seeks to define an organizational mechanism for examination of research and development on new analytic methods to test their application to intelligence production. Andy suggested PRG examine previous DDS&T efforts in this area since they involved considerable outside contract work rather than in-house actions. Andy also reported a recent conversation with [redacted] who has been provided a small staff to survey new methodologies and how they might be applied in DDI. [redacted] had asked for and received from Andy a listing of men who could contribute to this investigation.

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6. Andy also said he was working with DIA where a project is underway to produce an experimental product using Bayesian techniques. My discussion of the effort underway in PRG emphasized my feeling that production managers would have to have considerable control over the effort if they were to be receptive to the results, but Andy is of the belief that attention also needs to be given to a community mechanism outside DDI, DDS&T, and DIA. He has an idea that the use of outside consultants and contractors working with key elements of the DCI/IC staff might prove feasible. He also said that Pat Parker of ASD/I has advised him DIA already is using outside consultants to train selected analysts in advanced analytical methodologies.

7. Since Andy had mentioned the need for quality control in his 27 July memorandum, I told him I was aware of an effort already underway to survey evaluation methods and by close of the year was charged with preparing a study recommending how an improved evaluation system could be brought into effect. Pickett asked if he could be put in touch with this group and I declined on the grounds that the activity was being closely held and should be so regarded at least until its report had been completed. I did not identify the office which was preparing the study.

8. We also discussed briefly the discussions PRG has had with OMS/PSS focused on ways and means of identifying the attributes of good and bad analysts. I reported, however, that current indications were this would be a rather expensive project and decision had not been reached as to whether to proceed with it.

9. Andy indicated most of his present activities relate to formulation of a net assessment program. Commander Robin Pirie, who has had experience in OSD/SA prior to recent sea duty, has joined Andy's staff and will work on net assessment matters.

10. With respect to on-going projects, Andy is still reviewing notes on the proposed revision of the India-Pakistan study; the NSSM-69 study is in second redraft; Bob Baraz of State is heading the team on the Arab-Israeli cease-fire study; [redacted] 25X1
of CIA is heading the Jordan/Fedayeen civil war study; and [redacted] 25X1
of DIA will do the LAMSON-719 study. [redacted] wants JCS participation 25X1
in this.

11. Andy's office is being moved next week to Room 302, E.O.B. The telephone number will remain the same.

[redacted] 25X1
Chief, PRG/IC

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NATIONAL SECURITY COUNCIL
WASHINGTON, D.C. 20506

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27 July 72

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MEMORANDUM FOR [redacted]

FROM: ANDREW MARSHALL

SUBJECT: Analysis R&D and Training

To follow up on our luncheon discussion on Thursday, 20 July, I would like to expand on some of the points we covered. My concern has been that the response thus far to the President's memorandum of 5 November 1971 has not included a more positive set of measures to move toward at least the definition of a comprehensive program of product improvement. The tendency has been to interpret the tasking of the DCI to formulate such a program as being covered by the current activities of the NSCIC Working Group in the area of product review. No doubt the Working Group will generate some ideas for product improvement. But their work will not produce a comprehensive program. Piecemeal change of current processes or of individual products does not constitute the whole of a product improvement program.

Of course any list of potential elements of a comprehensive program would require further study and validation, but let me suggest some candidates. They would include programs to provide more training to intelligence analysts and R&D programs on new methods of intelligence analysis. The career systems and other incentive systems that affect analysts and influence the length of time he stays in his role as analyst is another possible progam area. Quality control operations conducted by independent offices of review and product assessment within producing agencies is another possibility. While the intelligence community is faced with a problem of extracting sufficient feedback from consumers, it is also true that it does not have an active and aggressive effort to study consumer needs.

But I really want to focus most attention on two areas: training and R&D on intelligence analysis. Given the kind of organization, the kind of career system that the CIA has, training programs are extremely important. Other intelligence organizations are not too different.

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Analysts tend to enter at the bottom of the career ladder and progress up it--there is very little lateral entry--and moreover in the near term recruitment difficulties may prevent the organization from hiring the absolutely best people around. I would hope that situation is not going to persist, but it may be with us for a while. All of these characteristics of the organization, of the career system, make it imperative that it utilize the talents of the people that do come into the system to their utmost. This suggests that training, specifically in this context training in intelligence analysis, may be an especially important way of trying to improve intelligence products. Moreover, I think there are several new areas of knowledge that have been developed in the last few years that are clearly at the center of the intelligence analysis problem; in particular, the fields of decision-making in small groups, in large organizations, and the use of Bayesian statistical techniques--both in the analysis of data and in the communication of uncertainty levels.

In any case, graduation from college does not necessarily make a man an analyst, and there is always room to teach him more rigorous approaches to examining problems by giving him additional skills that allow him to do his work better. This can be done without instituting whole new programs of instructions, through such vehicles as seminars, recommended reading lists and blocks of instructions inserted in programs already presented. In any case, I feel training is a very important factor in the quality of analysis, although it may not now be viewed as such by the community, perhaps partly because it may be a tendency to see analysis as some sort of intuitive process. Much of the analysis seems to be currently transmitted by an apprenticeship system. I think formal training might help analysts to do a much better job.

New, expanded programs of training should be examined for the contributions they might make in a comprehensive program of product improvement. The inevitable resource issues that such programs would raise should be considered at IRAC and in other appropriate forums. We need a community-wide strategy and program to work toward product improvement.

The second major area that I especially favor is that of a research and development effort in analysis techniques. For one thing analysts rely on individual-constructed frameworks, from which they view the world. Yet there are often other frameworks which can be helpful in improving their analysis. I mentioned a couple earlier--the area of organizational behavior and new statistical methods of analysis. What is needed is an on-going effort to explore these and any other approaches that seem worthy of exploration. Above all, the goal of an R&D program should be to put these techniques in a usable form for the analysts. For example, the possession of an ADP operation, canned programs and statisticians is a step in the right direction. But what is needed is to put these tools in forms usable by people without special training in mathematics or computers.

I recently had a briefing from some contractor people doing work in the application of Bayesian techniques. They have developed training methods that allow analysts who cannot understand the mathematics to perform their role as sources of expert judgment in a particular area and externalize their insights as to the probability of various events happening more effectively. Also many aids have been developed to allow analysts to indicate the additional amount by which the probability estimate of event is shifted as the result of a new bit of information added to that already available.

Parenthetically, I think that it would be an excellent idea to have some psychologists study the inference processes of intelligence analysts in particular problem areas in order to understand the role of: data, the assumptions they bring to the problem, the general analytic frameworks they use, heuristic devices they use, etc. I believe that such an analysis would show that the framework of analysis, the assumptions the analysts bring to the problem regarding the nature of governments, their typical decisions processes, the nature of human beings, etc. are a lot more important to the answer than specific pieces of data available. In typical intelligence problems the data is always pretty skimpy. A study of the inference processes might give us some additional insights into what kind of additional data is likely to be useful, given the existing inference processes, as well as telling us something about where we might profitably invest resources in training analysts. Perhaps we could discover the inference processes of good analysts and see how they differ from those of poor and mediocre analysts. To what extent could training the poor analyst get them to use superior inference processes and superior assumptions?

These are just a few ideas to flesh out two areas of what I think a program of product improvement might consist of. There are undoubtedly additional ideas around. What troubles me is that no one in the community sees it as his job to really try to put together a positive program designed to improve products through improved inputs of key factors; people, their training, innovation in intelligence analysis, etc. The implications for the community and its component organizations would be substantial. There are clearly numerous resource issues and tough tradeoff problems. Let's talk about all this the next time we meet.